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of the Gypsy and  
Brown-tail Moths*



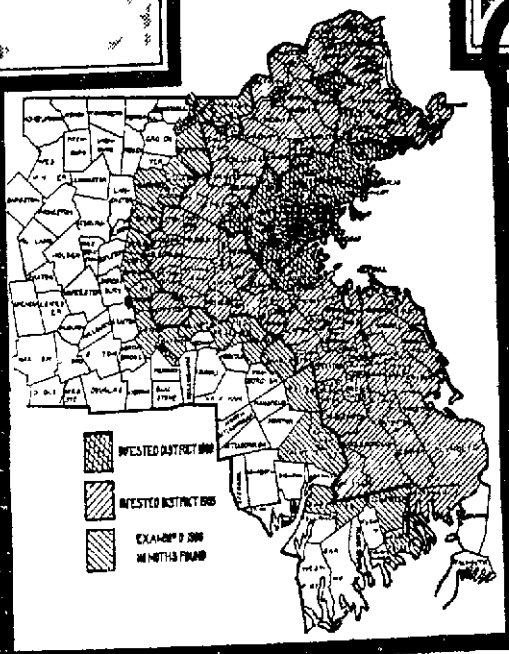
BY FRANKLIN P. WINSTON

The thought is: In a few years the beautiful little girls' braids which cover their heads will be covered as children start sweet away with the colored sugar globes and the surmounting decorations are bare and untidy like those of a team to which this is a kind of frizz.

The gipsy moth ate pillar will attract all that it finds and wood and iron although it is a perfect creature for its application and use. It will devour one of our most useful glass plants, flower shrub, the fish garden or field crop that grows throughout the island. In fact, portions of Massachusetts are swarming and dropping their leaves long before the walk up the house fronts and roofs and down the fence the in the order of dwellings free from his baleful presence.

As far back as authentic records extend the gripes in England have been a distinctive feature of the Old World. It has increased tremendously and thus it stands out from other periods decreasing only to increase again and renew the extended ravages. At the present time it is at its most numerous and distinct in Southern Russia. It dates to the year 1468 it was unknown in the western hemisphere. It was first reported there the last it was brought from Turkey by an experimenter living in the town of Menford Miss. The experiment of propagation in America was distinctly successful. Numbers of the mother escaped from their captivity and spread into many parts of the country. In 1907 Pastor M. A. Bennett introduced a new variety called "beauty" by 1890 so that it is probable that the state began exterminating the animal at that time.

This was continued for 13 years and the propagation of the pest so hindered that by that the people forgot about it and relaxed their vigilance. No sooner however had the state ceased its systematic operations than the moth began rapidly to gain headway and today it occurs in enormous numbers over a vast lar-



THE GERMAN MOths IN MASSACHUSETTS  
TERRITORY NOW INFECTED



### DESTROYING WINTER WEBS OF BROW-TAIL MOTH



## REMOVING THICK GROWTH FROM INFESTED SEKOOTEAN

The eggs hatch about May 1 and each mass of ten or twelve yields a swarm of small caterpillars the bulk of which become fully grown by midsummer. Greyish moth caterpillars of any age are decidedly hairy, their heads are large in proportion to their bodies, this being easily noticeable when they are young. When mature they have a dusky or smoky colored body. Along the back, counting from the head which is marked with yellow is a double row of blue spots followed by a double row of red. This double row of spots may be seen very distinctly on the back of a greyish moth caterpillar which has attained a length of an inch and a half or more. There are five pairs of blue spots and six pairs of red. No other New England larva has this double row of red and blue spots along its back. Until the caterpillar grows to the length of an inch and a half however, it does not always show this so is very distinctly lost not in greyish moth caterpillar not infrequently attains a length of three inches.

From about July 15 to August 15 the winged moths emerge from the pupae the date varying according to the season and the period of pupation. The male moth is brownish yellow varying to greenish brown in color. He has a slender body and expands about one and a half inches. He is active by day with a feeble flight. The female moth is nearly white with numerous small black markings. She is heavy bodied and sluggish and extends about two inches. The female does not fly, otherwise the spread

After malling the moths lire but a short time They take no food All damage to follow is done by the caterpillars The female dies after depositing her egg mass It is thus during the caterpillar stage that the moth spreads chiefly While they do not crawl very far from the place to which they hatch except when there is a scarcity of food they have the habit when small and young of spinning down on their silken threads from trees and falling on vehicles and other moving objects and are thus carried from place to place Electric cars pleasure and business vehicles bicycles and automobiles are thus media for their transportation It is for this reason that the state in its initial warfare on the pest devoted its energies chiefly to trees and woodlots and orchards adjoining the highways and their moving vehicles The caterpillars often crawl upon vehicles standing in an infested spot, and when the same are moved extend the infested area The egg clusters themselves may also be transported by any of the numerous objects upon which they are laid Freight cars that have stood upon sidings near infested foliage for a period long enough for the laying of the eggs in their crevices or sheltered angles may even thus transport the pest over long distances and it is quite possible that the moth has not yet revealed the infection

From May to August the caterpillars may be found in various stages of growth, diminishing rapidly in numbers after the middle of July. In the spring the small ones appear on the foliage, feeding principally on the under side of the leaf. As they grow they cast, or "molt" their skin several times, and these molted skins are characteristic signs of the presence of the moth. As the caterpillars acquire size their protective instinct leads them to begin to feed only at night and during the day seek shelter generally in clusters

This habit of the caterpillars of feeding at night and hiding during the day has suggested one means for their destruction especially in orchards and upon shade trees. All one has to do is to furnish a good and convenient place in which they may hide and then slaughter them in the broad day when they may readily be seen in uncovering their prepared refuge. As good a way as any and one which has been quite extensively followed in Massachusetts is to tie a short skirt or burlap upon the bole of a tree or if a very large tree on some of the larger limbs as well. When the daylight comes the caterpillars come out feeding on the tender plumes and crawl to the trunk of the tree in long processions. Finding the burlap they crawl under it and compose themselves to rest through the heat of the day until their enemy man comes along lifts the burlap skirt and scrapes them off the tree trunk into a pan for burning.

But to dress all the trees in the infested district with borup stinks and attend to them daily would require the services of half the population of New England. That is merely a way to protect certain trees after the eggs have been hatched. There are great acreages of brush and sprout land in which the pest also breeds and no borup method would here avail. When such a plot becomes infested there is but one thing to do—clear it and burn it and thus destroy the eggs. But the burning must be well done. As the eggs withstand the rigors of the New England winter, so are they also remarkably resistant to fire. An intense heat applied directly to the clusters is required to kill them.

Where low cost woodland and unimproved tracts of brush are extensively infested and it is not desired to save any of the young saplings, it is sometimes thought wise to burn the ground over with oil after the brush is cleared to destroy eggs scattered in cutting. If it is desired to save the saplings they require to be carefully gone over, after the brush is cleaned out and burned the egg clusters searched out and destroyed by painting with a mixture of creosote. To scrape them off would not avail it would simply scatter the eggs. Then this labor accomplished, the trees must be sprayed in the spring with a solution of arsenate of lead to kill the young caterpillars, and harrowed through the summer to kill those which escape the spraying. The labor that must actually be performed, which must be persistent and never ending if the pests are to be kept from disastrously multiplying, not to speak of their possible extermination is enough to stagger the man who owns a few acres of orchard or woodland.

insect although slightly differing in its habits from its predatory companion, is every bit as destructive and in some localities has been distinctly more so. Somewhere in Mass. has the honor of letting loose this pest upon the country. In Europe it has long been a pest of fruit and shade trees and is called the common caterpillar.\* In America it began its feeding almost wholly upon fruit trees, but within the past five years it has adapted itself to the taste for various species of forest trees notably the oaks. In the spring as soon as the buds unfold the young caterpillars begin to feed and where they are numerous completely strip the tree however large. When the food supply gives out they swarm along fences and walks in search of foliage

Unlike other caterpillars most of which may be handled with impunity when the caterpillar of the brown tent moth comes in contact with human flesh there is produced a most severe and painful netting. This is due apparently not to any poisonous secretion in the hairs, but rather to the finely barbed and brittle hairs themselves, which enter and break off in the flesh. So severe is this affection that in many cases in Massachusetts people have been made distinctly ill by it, and as it swarms in some places in immense numbers in the vicinity of the house, which it frequently enters, it may often be touched inadvertently.

The egg mass of the brown-tail somewhat resembles that of the greytail, but it is seldom laid upon a tree trunk or any where save on the underside of a leaf. It is smaller and more elongated than the greytail egg cluster and of a brighter, reddish brown color. But here comes in a radical difference in habit. The eggs of the brown tail do not hatch until August. One would conclude from this that the caterpillars could do little damage being born after the foliage has practically served its purpose and is ready to turn brown and wither, and they do cause but little damage the year in which they are born. When they first hatch they feed for a while on the upper surface of the leaves, but soon commence the work of spinning their winter webs. In making the web a number of leaves are drawn together, and a tenuous silken thread is woven about them. The web is grayish in color composed of dead leaves and silk, and is very hard to tear apart. Each web contains about 250 caterpillars, and varies in length from four to six inches. With the approach of cold weather the caterpillars enter the web and close the exit holes.

Then is demonstrated the strange phenomenon of a caterpillar 'wintering over'



KILLING THE EGGS OF THE GYPSY-MOTH



VARIOUS STAGES OF THE GYPSY MOTH  
(1 FULL-GROWN CATERPILLAR 2 PUPA  
3 FEMALE MOTH LAYING EGG CLUSTERS)

ing the following spring to complete its life when only one quarter grown and emerge like hisio y. The extent of roll in New England do not seem to affect the use in seeds adversely. It y change in the spring—usually early in April—at first the buds and then the blossoms and at last the foliage of fruit trees as soon as it develops. The full grown caterpillar is about two inches in length with a brown white stripe on either side and two conspicuous red dots on the back near the posterior end. Stripping the foliage of one tree, they go to others and continue to eat until full grown when the cocoons are spun within the leaves at the ends of the branches.

The moths are pure white on the wings. The male is slender bodied while the female has a conspicuous hump of brown hair at the tip of the abdomen, from whence the name 'brown all moth'.

Both the male and female brown all moths fly mainly by night and are greatly attracted to lights. As in the case of the gipsy moth all the destructive work of the brown all is done by its caterpillar which while the gipsy moth caterpillar habitually feeds by the same spining down habit and so travels extensively by the way of making web lo.

While the gypsy is best destroyed in the egg the growth web is most accessible in the caterpillar web. The winter web or nests containing the hibernating caterpillars are conspicuous objects at the tips of twigs from October to April. These webs may be sought out and removed by the use of pole shears or long handled pincers and then carefully collected and burned. When a light snow is on the ground the work of web destruction can be best carried on as when the web is brought down by the shears it is not apt to be overlooked upon the snow. Where tall trees are infested two men one to point out the nests from the ground and the other to cut them off, can work to best advantage.

like the male is a strong swift flier, and can carry her eggs long distances before depositing them. For this reason the brown-tail has spread much farther from its point of introduction in Massachusetts than has the gyrfalcon in its flight. It is often aided by strong winds and is also transported on steamboats and in electric and steam cars to which it is attracted at night by the lights.

The brown tail is already known to have spread at least as far northeast as Iasport, Me. and as far south as Cape Cod. To the west it has been found at Amherst. Mass. The eastern portion of Massachusetts from north to south is now quite solidly infested although less so south of Boston and the moth, doubtless exists in many communities in and out of the state from which it has not yet been reported.

It is evident that the extermination of suppression of these pests can never be successfully accomplished by leaving the matter to individuals. Unless a parasite can be found to prey upon and destroy the eggs of these moths, and the State of Massachusetts is already expalting with a thuy fly which it is hoped may perform the useful service—it will require the prompt action of the people collectively as a state as well as individually as citizens to make any headway whatever against the present wholesale devastation. If the matter of the small boy for the collection of birds' eggs could be diverted into as ardent a liking for the discovery of the nests of the grey and brown tail moths, the New England lands could render a distinct and wholesome service, but the lack of variety in the sport would probably mean its speedy desertion.

Meanwhile it is a condition which confronts New England and not a theory. If the trees are to be saved, the labor must be expended to save them even if it presses into the service of moth-catching the small boy as well as the small boy's parents.

that are there are few to adorn the mantelshelf in the cottage

In this practical age there are few people who are not glad to take advantage of the opportunity to add to their incomes should the occasion occur. And for persons who keep their eyes open there are many channels at the present day in which any man or woman may if so inclined turn their energies to profits. Perhaps one of the best of these lies in the securing of many kinds of antiques and art treasures in demand by collectors which are to be found in very large numbers all over the country. If only one knows where to look for them

The most likely places of all where this kind of thing is to be found are in the kind of the very villages and it is no exaggeration to say that a number of pikeless relies are in existence at the present moment in humble cottages although their owners are quite unaware of the value of their possessions. The fine old grandfather clock is such a familiar feature of the cottages kitchen that most persons will scarcely attach much value to this article.

demand amongst dealers for this relic of a bygone age. With a few trifling exceptions these big clocks are not manufactured at all at the present day, so that any 'grandfather' which one may come across is almost certain to be really an old one. Good specimens in working order, if the case be of some solid wood such as oak or rosewood, will sell for \$100 easily and the value is a good deal enhanced if the clock has an engraved brass face.

It is quite possible that anyone might come across one of the finest decorated grandfather clocks. These were made about 150 years ago and the particular feature about them is that the cases, although manufactured in England, were sent out to the Far East to be enriched with mother-of-pearl and generally decorated. There were very much wanted at the present time, and such a clock in good preservation would sell easily for good hundred dollars. One word of caution may be given to the speculator in grandfather clocks. At all costs avoid grandfathers which only go for 80 hours, there are many of these about, and although they are old yet they are little better than new.

Many kinds of candlesticks commonly,

adorn the mantelpiece in the cottage. Flues, if of brass are not worth very much even though old. The searcher should keep his eyes open for those known as 'Sheffield' wares. These are always in good request, especially if the shape is elegant. This kind of candlestick was a rule made of copper and then plated with silver, and the red color of the former metal may be generally discerned at the worn edges. If not so, this portion of the article scraped with the point of a sharp knife will reveal the nature of the metal underneath. The mere fact of these Sheffield candlesticks being in a dirty condition does not take away from the value at all and indeed is likely to enhance it, as being in some cases a sign of great age.

Of course violins are rather difficult things for the amateur buyer to value, and hence speculating to any extent it is wise to engage in some small course of study as to the various makers.

Still, one cannot go far wrong in picking two or three dollars on any old violin. Not so very long ago an old violin was mentioned in the London papers as having been picked up at a country auction sale for about \$2. This turned out to be a "Paganini"! Of course it sold for a pretty good price, but it was not so easily afterwards for an immense amounting into thousands of dollars.

It may be instructive to mention that the name of the maker of the violin of reputation is usually to be seen on the inside of the case, looking through one or other of the "curious 'S' shaped holes which appear on the face of the instrument.

The appraisal of the value of pictures is a matter of itself, but a little study of the works of some of the great painters will soon give the treasure hunter sufficient knowledge to prevent being done. Most particularly one should be on the lookout for small water color paintings by such a man as Maeson for instance. These are often somewhat insignificant to look at, and yet worth a great deal of money. A case in point is that which happened to a friend of the writer's. A small water color picture about six inches square was picked up for \$2. The lucky buyer discovered it was by a celebrated painter and sold it to a dealer in London for \$200. It is known that there are a large number of Turner's pictures in the hands of people of the country and there might be a deal of many other famous artists.



